WHAT IS CLAIMED IS

1. A process for cleaning a surface of a semiconductor wafer, which comprises:

a) conveying a component selected from the group consisting of: a dense gas component, a liquid component and a mixture thereof to a bellows accumulator having a bellows therein;

b) applying an elevated pressure to said bellows sufficient to discharge said component from said bellows onto said surface of said wafer; and

c) contacting said component with said surface of said wafer.

2. The process of claim 1, wherein said dense gas component is dense carbon dioxide or supercritical carbon dioxide.

3. The process of claim 2, wherein said liquid component is an organic liquid component soluble or miscible in dense carbon dioxide or supercritical carbon dioxide.

4. The process of claim 1, wherein said liquid component is selected from the group consisting of: isopropyl alcohol, hydrofluoric acid, pyridine and combinations thereof.

5. The process of claim 1, wherein said elevated pressure is applied to said bellows via a compressed gas.

6. The process of claim 1, wherein said component is a mixture and is contacted with said surface of said semiconductor wafer in a pressure chamber, wherein the component charges the pressure chamber to a free headspace pressure of about 1000 psia or more, and wherein said bellows discharges said mixture at a flow rate to impart a component velocity of about 10 cm/sec or more.

7. The process of claim 1, wherein said component is a mixture and is contacted with said surface of said semiconductor wafer in a pressure chamber, wherein the component charges the pressure chamber to a free headspace pressure

of about 2400 psia or more, and wherein said bellows discharges said mixture at a flow rate sufficient to impart a component velocity next to the wafer surface of about 50 cm/sec or more.

8. A process for cleaning a surface of a semiconductor wafer, which comprises:

a) conveying a dense gas component to a first bellows accumulator having a first bellows therein;

b) conveying a liquid component to a second bellows accumulator having a second bellows therein;

c) applying an elevated pressure to said first bellows sufficient to discharge said dense gas component from said first bellows onto a surface of said wafer;

d) applying an elevated pressure to said second bellows sufficient to discharge said liquid component from said second bellows onto said surface of said wafer; and

e) contacting said dense gas component or said liquid component with said surface of said wafer.

9. The process of claim 8, wherein said elevated pressure is applied to said second bellows via said dense gas component.

10. The process of claim 8, wherein said dense gas component and said liquid component are mixed prior to application to said surface of said wafer.

11. A process for cleaning a surface of a semiconductor wafer, which comprises:

a) conveying a dense gas component to a first accumulator wherein said first accumulator is a bellows accumulator having a first bellows therein;

b) conveying a liquid component to a second accumulator;

c) applying an elevated pressure to said first bellows sufficient to discharge said dense gas component from said first bellows onto said surface of said wafer;

d) applying an elevated pressure via said dense gas component to said second accumulator sufficient to discharge said liquid component from said second accumulator onto said surface of said wafer; and

e) contacting said dense gas component and said liquid component with said surface of said wafer.

12. The process of claim 11, wherein said dense gas component and said liquid component are mixed prior to application to said surface of said wafer.

13. A system for cleaning a surface of a semiconductor wafer, which comprises:

a) a bellows accumulator having a bellows therein adapted to receive and retain a component selected from the group consisting of a dense gas component, a liquid component and a mixture thereof;

b) a means for applying an elevated pressure to said component sufficient to discharge it from said bellows;

c) a chamber adapted to receive and retain said semiconductor wafer and receive said component.

14. A system for cleaning a surface of a semiconductor wafer, which comprises:

a) a first accumulator wherein said first accumulator is a bellows accumulator having a bellows therein adapted to receive and retain a dense gas component;

b) a means for applying an elevated pressure to said dense gas component sufficient to discharge it from said bellows;

c) a second accumulator adapted to receive and retain a liquid component;

d) a means for applying an elevated pressure to said liquid component sufficient to discharge it from the second accumulator;

e) a chamber adapted to receive and retain said semiconductor wafer and receive said dense gas component and said liquid component.

15. The system of claim 14, further comprising a means adapted to receive and mix said dense gas component and said liquid component prior to said chamber.

16. A process for mixing a liquefied gas component and a liquid component, which comprises:

a) conveying a dense gas component to a first accumulator wherein said first accumulator is a bellows accumulator having a first bellows therein;

b) conveying a liquid component to a second accumulator;

c) applying an elevated pressure to said first bellows sufficient to discharge said dense gas component from said first bellows;

d) applying an elevated pressure to said second accumulator sufficient to discharge said liquid component from said second accumulator;

e) combining the discharged dense gas component and the discharged liquid component to form a mixture.

17. The process of claim 16, wherein the second accumulator is a second bellows accumulator.

18. The process of claim 16, wherein said dense gas component is dense carbon dioxide or supercritical carbon dioxide.

19. The process of claim 16, wherein said liquid component is an organic liquid component soluble or miscible in dense carbon dioxide or supercritical carbon dioxide.

20. The process of claim 16, wherein said liquid component is selected from the group consisting of: isopropyl alcohol, hydrofluoric acid, pyridine and combinations thereof.

21. The process of claim 16, wherein the elevated pressure is applied passively.